Math Activity 1
Surviving at Jamestown Using Math

<u>Objective:</u> The students will understand the importance of corn that the settlers received from the Powhatan Indians.

<u>Virginia Standards of Learning (Math):</u>

º 3.8   The student will solve problems involving the sum or difference of two whole numbers, each 9,999 or less, with or without regrouping, using various computational methods, including calculators, paper and pencil, mental computation, and estimation.

º 3.9   The student will recall the multiplication and division facts through the nines table.

º 3.10   The student will represent multiplication and division, using area and set models, and create and solve problems that involve multiplication of two whole numbers, one factor 99 or less and the second factor 5 or less.

º 3.16   The student will identify equivalent periods of time, including relationships among days, months, and years, as well as minutes and hours.

º 3.21a   The student, given grid paper, will collect and organize data on a given topic of his/her choice, using observations, measurements, surveys, or experiments.

º 3.22   The student will read and interpret data represented in line plots, bar graphs, and picture graphs and write a sentence analyzing the data.

<u>Directions for teachers:</u>

Activity:

You have been named the "Cape Merchant" for the new colony at Jamestown. Your primary responsibilities are to secure, store and distribute food to your fellow settlers. The number of settlers at Jamestown varied over time. The colony's primary source of food was provided by the local Powhatan Indians through trade. The most prevalent food crop traded for was corn, measured in bushels. An early settler once wrote that each settler needed 2 gallons of corn meal a week to survive.

1 bushel of corn = 8 gallons of meal/corn
2 gallons of meal/corn will feed 1 person for 1 week; or
1 bushel of corn feeds 1 person for 4 weeks

The settlers ate many other types of food, but for this activity we will only be concerned with the corn they sometimes got from the Powhatan Indians. Without the food given them by the Powhatan Indians, the English would not have survived at Jamestown. The following calculations you will be making are based on written accounts (in italics and bold) by some of the early settlers.

The three ships arrived at the location where the settlers began their new colony. They named it Jamestown in honor of their king, James I. George Percy wrote, "*The thirteenth day [of May, 1607] we came to our seating place ….Monday the two and twentieth of June [1607], Captain Newport … departed from James[town] for England. [He] leaving us (one hundred and four persons] very bare and scanty victuals (food). [W]e hoped after a supply which Captain Newport promised within twenty weeks.*" (Quoted from George Percy's, Discourse, in Jamestown Narratives, Eyewitness Accounts of theVirginia Colony, The First Decade: 1607-1617, edited by Edward Wright Haile, pp. 94 and 98.)

Calculate the numbers of bushels of corn you would need to feed the original 104 settlers for the following amounts of time and plot your answers on the graph using a different color for each answer:
   1) One week in red
   2) One month (4 weeks)in blue
   3) Twenty weeks/five months in green
      (the amount of time Captain Newport was to be gone before returning with more supplies).

George Percy wrote, "*Our men were destroyed by cruel diseases,…, but for the most part they died of mere famine.…Our food was but a small can of barley sod in water to five men a day.…Thus we lived for the space of five months in this miserable distress.*" (Percy, Discourse, Narratives, Haile, pp. 99-100.) It actually took Newport 28 weeks to arrive at Jamestown with more supplies and settlers.

Early in 1609, Captain John Smith, the new leader of the colony since September 1608, went on a trading expedition to Werowocomoco, the capital town of the Powhatan Indians and the residence of their paramount chief, Powhatan. Smith also visited other Powhatan Indian town sites. During this expedition, Smith either traded for corn or took corn from the Powhatan Indians. According to his account he was able to deliver "*to the cape merchant 279 bushels of corn.*" (John Smith, The General History, in Narratives, Haile, p. 312.) At this point in time there were about 200 settlers alive at Jamestown.

Calculate the numbers of bushels of corn you would need to feed 200 settlers for the following amounts of time and graph your answers on the graph using a different color for each answer:
   1) One week in red
   2) One month (4 weeks)in blue
   3) Twenty weeks/five months in green
       (the approximate amount of time that passed before Captain Newport arrived at Jamestown with supplies   and more settlers in August 1609.)
   QUESTIONS: Were the 279 bushels of corn sufficient to feed all the colonists until August? If not, how   many more bushels of corn were needed to feed everyone before the supply ships arrived?

In August 1609 the new supply arrived at Jamestown. Nine ships left England for Virginia in June 1609 with about 500 settlers; men, women and children. The fleet of ships was hit by a hurricane on July 24, only eight days from the Virginia coast. One of the ships sank, one ship, the Sea Venture, shipwrecked on the island of Bermuda with about 180 settlers, and the other

seven ships reached Jamestown with about 250 settlers. Unfortunately, much of their food was gone due to their lengthy and difficult voyage, and many arrived sick from various diseases. John Smith was injured in an accident and returned to England leaving about 450-500 settlers in Jamestown by the fall of 1609. The colony's new leader, George Percy, tells us what happens at Jamestown during the winter of 1609-1610, known as "The Starving Time."

"*Now all of us at James Town beginning to feel that sharp prick of hunger, which no man truly describe but he which hath tasted the bitterness thereof. A world of miseries ensued, …, insomuch that some, to satisfy their hunger, have robbed the store, for the which I caused them to be executed. Then having fed upon horses and other beasts as long as they lasted, we were glad to make shift with vermin, as dogs, cats, rats, and mice. [Some ate their] boots, shoes, or any other leather some could come by. And those being spent and devoured, some were enforced to search the woods and to feed upon serpents and snakes and to dig the earth for wild and unknown roots, where many of our men were cut off and slain by the [Powhatan Indians]. And now famine beginning to look ghastly and pale in every face that nothing was spared to maintain life and to do those things which seem incredible, as to dig up dead corpse out of graves and to eat them. ……………………………………………………………………… [Out] of five hundredth men we had only left about sixty.*" (George Percy, A True Relation, in Narratives, Haile, p. 505 and 507.)

Calculate the numbers of bushels of corn you needed to feed 500 settlers for the following amounts of time and graph your answers on the graph using a different color for each answer:
    1) One week in red
    2) One month (30 days) in blue
    3) Twenty weeks/Five months in green
       (the approximate amount of time that passed before the next ships arrived at Jamestown with supplies and   more settlers in May 1610.)

Using the information from your graph, think about the following:
    1) What do you notice about the number of people and the amount of corn?
    2) What do you think might affect the amount of corn the settlers could have to eat?
      a) What if a drought occurred?
      b) What if more settlers arrived?
      c) What problems would you have storing the corn?
      d) What else can you think of that would affect the supply of corn?
      e) What other foods do you think the settlers found to eat other than corn?

BUSHELS OF CORN NEEDED TO FEED THE COLONISTS (y-axis: 0, 300, 600, 900, 1200, 1500, 1800, 2100, 2400, 2700)

NUMBER OF COLONISTS (x-axis: 0, 100, 200, 300, 400, 500, 600, 700, 800, 900)